




Projects library of the specialized group for construction

PUBLIC BUILDINGS

Domain	Education	
Project name	Reconstruction of the school of Dessources in Leogane A project of the PARIS (Programme d'Appui à la Reconstruction des Infrastructures Scolaires)	
Country	Haiti	
Region/town	Leogane	
Area	Peri-urban	
GIS data (WGS 84)	18° 27' 46.75" N 72° 37' 57.52" O	
Project type	New construction	
Typology	Primary school	
Approach	Contracted construction	
Beneficiaries	430 children	
Climate	Hot, humid	
Special constraint	Earthquake / hurricane	
start / end of project	2011 - 2012	
Country GNP	820 USD/cap	

Partners

Organization (donor)	SDC, ROCHE, Lichtenstein
IO/NGO partners	-
GO partners	MoE

Context to project

Initial Situation	3 classrooms building destroyed by the 2010 earthquake. 6 classrooms in temporary structure erected on site.
Goals, Beneficiaries	Reconstruction of school compound up to adequate norms and standards for 430 children in simple vacation.
Implementations/Results	School inaugurated for the school year start in October 2012.

Reference data (comparative)

Land plot	3'000 m2	Number of blocks	3 + 1 (existent structure)
Classes per blocks	3	Number of units	9 + 2 kindergarten
Children / unit (classes)	40	Total beneficiaries	430 children (simple vacation)
Latrines	Toilet (m/f, adult, disable) with septic tank	Other infrastructure	Kitchen, refectory, library, teacher room, director office, 2 deposits, solar pump, water tanks, guard room, fencing
Ground floor (incl. walls)	940 m2 (covered area)	Floor (incl. walls)	940 m2 (covered area)
Total surface	940 m2 (covered area)	Surface / beneficiary	2.2 m2 / beneficiary
Volume (outside dim.)	4'000 m3	Volume / beneficiary	9.3 m3/ beneficiary
Heated surface	0 m2	Heated surface/ ben.	n/a
Cost of complex	550'000 USD	cost/beneficiary	1'279 USD / children (seat)
Total cost	550'000 USD	Self help (beneficiaries)	n/a



Approach to results (related to the programme PARIS)

Initial Situation

The massive earthquake of 12 January 2010 damaged or destroyed nearly the 80% of the schooling infrastructure in the affected departments, highlighting dramatically the poor construction quality in the country, the absence of norms and standards for public building and the incapacity of the authority to regulate the system. As a result, the MoE, froze, for more than 2 years, all permits for new permanent school construction mainly because they were not in position to guide and control the reconstruction process up to adequate standards. In the meantime, the MoE and the Ministry of Public Works, issued revised architectural and structural norms which set new and ambitious standards, especially for the seismic resistance, based on seismic maps taking into account an event with a return period of 2'500 years, meaning for Haiti a max. PGA of 8.4G. In order to meet these structural standards, a complete rethink of the usual construction technique was necessary, especially for 2 storey buildings largely needed in the urban and peri-urban affected areas.

Approach

In 2010, SDC, in collaboration with the Swiss engineer firm Basler & Hoffman, has elaborated a first school building model, aiming to promote adequate structural and architectural standards with a focus on safety, durability and comfort, with a touch of modernity. The pilot model was elaborated for SDC's own projects, but also with an intention to be reused in similar context by other actors. The model was elaborated taking into account several criteria such as modularity, material availability, durability, improved comfort (light, ventilation, heat) and cost efficiency. In January 2011, SDC launched the construction of two pilot schools, the Dessources school in Leogane (1 storey building) and the Sacré-Coeur school in Petit-Goave (2 storey building) for which the MoU had exceptionally delivered in October 2010 two construction permits. These two schools have allowed SDC to test a modern paraseismic concept in concrete and its feasibility in the local context. Based on these experiences, SDC revised the plans to make a first standardized model in concrete, accompanied with exhaustive documentation, to be handed over to the MoE. This model is currently under construction in the SDC projects in Berquin and Chalon (see forthcoming data sheet).

The approach, of elaborating school models has been identified by the MoE and all relevant actors as a crucial need in Haiti. This led SDC and its partner to initiate a process to elaborate with the MoE different schools models. In this frame, two others models were elaborated, i.e. a second in Confined Masonry and the third in Wooden structure, which are technically and financially accessible to the majority of builders in Haiti.

Problems/Constraints

There were no particular problems related to the construction technique used, rather several implementation constraints such as: good accessibility to the site, choice of mid- to high level contractors, close site supervision.

Regular delays in the construction mainly due to the weak capacity of the contractor to organize and anticipation have affected the progress speed.

Lessons learned

The process officially launched in October 2011 took nearly 8 month to see the first results and nearly 18 months to reach the first outputs i.e. submission of the three models with the acknowledgement of the authority. In addition to that, 8 months will be necessary to test the models, and another 2 – 4 months to make the final revision. In Haiti, this was possible thanks to a special setup with the continuous presence of an engineer specialized in para-seismic techniques and an architect designer as well as the support of a local Education specialist for all institutional aspects.

Evaluation

The principal strength of the project are:

- Approach promoting school construction to adequate standards
- Performance of the building (light and strong at the same time)
- Comfort of the classrooms (natural light, ventilation)
- Good ratio costs/quality/duration (good investment)

The principal weaknesses of the project are:

- The school model (concrete panel system) proved to be efficient for a 2 storey building (Sacré-Coeur) but less pertinent for a one storey building like the one Dessources school.
- The implementation of such system is limited to mid and high level contractors and needs a high level of supervision.



Humanitarian Aid construction group

Legal framework

Political attachment

Type of ownership Public

Construction information

cost repartition

Construction

Structure	Foundations	Concrete		
	Walls or columns	Confined masonry in cement blocks		
Materials	Facade	Exposed concrete panels		
	Roof	Metal structure		
	Earthquake protection	PGA 0.84G / seismic joint between blocks		
	Floor surface	Concrete (smoothed after casting)	350'000	63%
	Walls:	Cement blocks		
	Doors	Open metal grids		
	Windows	Fixed aluminum		
	Ceiling	no		
	Thermo insulation	Isolated corrugated sheet		
	Roof	Corrugated sheet (type aluzine)		
Watsan	Water	Borehole, solar pump, water tanks		
	Toilets	Flush toilet	75'000	13%
	Waste water	Septic tank		
	Rain water	No RW collection		
Equipment	heating system	No		
	Electricity connection	Connected to local network		
	Telephone connection	No	40'000	7%
	Cooking facilities	Yes, Kitchen, refectory, deposit		
	Furniture	Yes, metal and wood		
Landscaping	Enclosure wall	Cement blocks	70'000	
	Playground / access	Cement cobblestone	10'000	17%
	Plantation	Yes	5'000	
Total			550'000	100%

Urban planning

Distance to :
villages 0 m (In semi-urban area)
Public transport 50 m

For further information

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Other involved SHA consultants	-
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Recommended Institutions:	-
Recommended partners:	-
Recommended books/reports:	Daniel Schwitter, SKAT, aug-sept. 2012 Marina Marinov, FG Bau, 10 july 2012. Werk, Bauen + Wohnen, November 2012 Christian Ubertini, Bilan fin de phase 1, may 2013.
Relevant other projects (links):	http://picasaweb.google.com/ddchaiti



HAITI : ECOLE DE DESSOURCES A LEOGANE (2012)



Main building with 9 classrooms in a row



Interior of a classroom



School start, october 2012



Sanitory



Situation plan